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DISCUSSION OF HIGHWAYS AND PUBLIC WORKS

LEWIS H. POUNDS, President of the Borough of Brooklyn:

I am not going to say much about street cleaning, but I may say that until Commissioner Fetherston took charge of the job, we were ready and anxious in each of our boroughs to take the task of street cleaning. Since he has taken charge we are not so certain whether we ought to undertake it, nor is our desire so keen. He is doing so well that probably the existing organization will continue.

I have had prepared a table giving the kinds of pavement, with the number of miles and the square yards in each borough.

Out of a total of 1,625 miles of permanent pavement throughout the greater city, Brooklyn has no less than 734, Manhattan coming second with 452, while Queens has 205, The Bronx 183 and Richmond 52. For the money used in construction and maintenance and the mileage, there is not a city on the face of the earth that can show better pavements than the borough of Brooklyn. European cities, of course, have some of the finest streets in the world, but many of their back streets, off the main lines of travel, are not up to the standard of those other streets, while we use only asphalt and granite, with wood block, to a limited extent, and our little-traveled back streets are just as well paved as our main streets.

Our asphalt plant in Brooklyn has been of material assistance in keeping up the quality of our streets; for it is necessary to repair at once and repave quickly if you would have your streets in good condition. Manhattan has labored under a disability in that her asphalt plants are just getting into operation. Brooklyn's asphalt plant began its useful existence in 1907. The cost the first year was 85 cents per cubic foot; the next year, 76 cents; the next year, 68 cents; the next year, 57 cents; the next year, 56 cents; the next year, 47 cents; in 1913, 45 cents; in 1914, it was 41 cents. Those figures indicate efficiency and economy in at least one part of your municipal government. I think the cost is down about as low as it can get now. The reduction has been due largely to reorganization and improvements that lead to the handling of the material in the very best manner.

As for repairs, this question of opening of pavements is a vexatious one. We have been able to reduce it considerably, and throughout our mileage, which is quite extensive, the number of openings last year was 23,345. Before we pave a street we give personal notice to every

| MILEAGE AND YARDAGE OF PAVEMENTS IN THE BOROUGHES OF THE CITY OF NEW YORK | | | | | | | | | | | | |
|--|-----------|-----------|--------|-----------|--------|-----------|----------|-----------|----------|------------|--------------|------------|
| January 1, 1915 | | | | | | | | | | | | |
| Class | Manhattan | | Bronx | | Queens | | Richmond | | Brooklyn | | All Boroughs | |
| | Miles | Sq. Yds. | Miles | Sq. Yds. | Miles | Sq. Yds. | Miles | Sq. Yds. | Miles | Sq. Yds. | Miles | Sq. Yds. |
| Sheet Asphalt..... | 248.31 | 4,941,716 | 52.98 | 1,201,778 | 27.81 | 457,576 | 0.45 | 6,494 | 536.28 | 9,843,992 | 865.83 | 16,451,556 |
| Asphalt Block..... | 55.88 | 1,323,712 | 59.36 | 1,313,692 | 24.14 | 483,539 | 4.09 | 71,337 | 29.71 | 573,873 | 173.18 | 3,766,153 |
| Granite Block..... | 101.35 | 2,294,551 | 46.83 | 1,165,657 | 35.65 | 636,960 | 6.63 | 128,694 | 135.05 | 2,152,179 | 325.51 | 6,373,041 |
| Medina..... | 0.26 | 5,210 | 0.28 | 3,954 | ..... | ..... | 0.32 | 6,794 | 6.98 | 116,315 | 7.84 | 132,273 |
| Belgian..... | 11.98 | 233,039 | ..... | ..... | 3.05 | 56,122 | ..... | ..... | 8.97 | 207,748 | 24.28 | 502,535 |
| Trap..... | | | 0.08 | 2,374 | ..... | ..... | ..... | 0.20 | 3,252 | | | |
| Cobble..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4.04 | 65,442 | 4.04 | 65,442 |
| Brick..... | ..... | ..... | 0.04 | 1,091 | 11.35 | 188,735 | 5.21 | 99,009 | 1.50 | 40,123 | 18.10 | 328,958 |
| Wood Block..... | 33.92 | 752,279 | 4.38 | 121,791 | 9.30 | 170,216 | 8.50 | 175,888 | 7.28 | 131,717 | 63.38 | 1,351,891 |
| Iron Slag..... | ..... | ..... | 1.55 | 31,807 | 0.22 | 2,200 | 2.06 | 48,525 | 4.26 | 80,901 | 8.09 | 163,433 |
| Bituminous Concrete.. | ..... | ..... | 17.00 | 340,265 | 93.26 | 974,575 | 24.42 | 346,609 | ..... | ..... | 134.68 | 1,661,449 |
| Concrete Pavement .. | ..... | ..... | ..... | ..... | ..... | ..... | 0.28 | 5,210 | 0.02 | 400 | 0.30 | 5,610 |
| Totals, exclusive of Macadam..... | 451.70 | 9,550,507 | 182.50 | 4,182,409 | 204.78 | 2,969,923 | 51.96 | 888,560 | 734.29 | 13,215,942 | 1625.23 | 30,807,341 |
| Bituminous Macadam..... | ..... | ..... | ..... | ..... | 40.70 | 469,598 | 19.80 | 267,668 | ..... | ..... | 60.50 | 737,266 |
| Macadam..... | 4.49 | 83,550 | 123.00 | ..... | 212.49 | 2,564,931 | 153.82 | 1,478,508 | 114.78 | 2,116,163 | 608.58 | 6,243,152 |
| Totals of Macadam..... | 4.49 | 83,550 | 123.00 | ..... | 253.19 | 3,034,529 | 173.62 | 1,746,176 | 114.78 | 2,116,163 | 669.08 | 6,980,418 |
| Unpaved Streets (Dirt Roads) open to Traffic | 20.00 | ..... | 142.80 | ..... | 600.00 | ..... | 93.36 | ..... | 373.00 | 5,500,000 | ..... | ..... |

property owner on the street that it is going to be repaved; that he must put in and adjust his sub-surface improvements; and that we will not allow the pavement to be opened under a year. That rule is hard to enforce, but except in case of emergency, we do live up to it.

I was so disturbed about the number of our openings that I obtained the figures from Chicago and Philadelphia. Chicago, with about two thousand miles of pavement, had during the past year 39,430 openings. That is worse than we are. Philadelphia, on a mileage of less than fourteen hundred miles, had 23,336 openings.

Just a final word; I will not go into it in detail. We are carrying on in Brooklyn for the whole city perhaps the most advanced experiment in sewage disposal that is being tried in this entire country. We believe that we have reached the correct process, so far as modern inventions make possible the institution of machine methods to preserve our rivers and our harbor from the pollution that has been going on all these years. Our transit problem being reasonably settled, the next great question is our port development; and after that, sewage disposal. Manhattan has a bill of about fifteen million dollars confronting it for that purpose. While the other matters just before you are perhaps immediate, the sewage problem is an important one, and it is going to be solved.

The following facts regarding Brooklyn's streets and pavements, some of which have been referred to earlier, may prove of interest: total pavement in the borough January 1, 1915, 849 miles; total unpaved streets open to traffic, 373 miles; asphalt pavements, 565 miles.

Standard pavements used in Brooklyn are as follows: sheet asphalt consisting of concrete base, 1 inch of binder, 2 inches of wearing surface; granite block pavement, consisting of concrete base, 1 inch sand cushion and 5 inch granite blocks, laid in $\frac{3}{8}$ -inch joints. The average life of sheet asphalt pavement is 16 years.

The total number of openings in pavements in 1914 was 23,345. If the area of all the openings made in 1914 were combined and reduced to a 3-foot trench, it would equal a trench 3 feet wide and 58 miles long. This includes only those openings restored by the bureau forces; in addition there are many restored by contractors which are not included. The total number of square yards of pavement repaired during 1914 was 473,000 square yards. This yardage would pave a street 30 feet wide and 27 miles long. In addition there were repaired and kept in shape 184 miles of dirt roads, and 120 miles of streets were oiled. During 1914, 5,875,635 square yards of sheet asphalt pavement were maintained by the municipal asphalt plant, at a cost of $2\frac{1}{2}$ cents per square yard for maintenance. The lowest cost at which this was ever done by con-

tract in the borough of Brooklyn was $3\frac{1}{2}$ cents. The cubic foot of material manufactured at the plant and laid in place on the street is the unit upon which costs are determined. Further increased efficiency and reorganization are shown by fact that cost of producing and laying per cubic foot of asphalt has been greatly reduced since the beginning of the operation of the plant. Cost is as follows:

| | |
|-----------|----------|
| 1907..... | 85 cents |
| 1908..... | 76 cents |
| 1909..... | 68 cents |
| 1910..... | 57 cents |
| 1911..... | 56 cents |
| 1912..... | 47 cents |
| 1913..... | 45 cents |
| 1914..... | 41 cents |

Since consolidation in 1898, 709 miles of pavement have been laid. A great amount of this pavement is, of course, laid in the suburbs where no pavement existed at the time of consolidation, but it is also noticeable that at the time of consolidation there were in the borough of Brooklyn 242 miles of cobble-stone pavements, and these cobble stones have been reduced to four miles. 1912 was the maximum paving year; in that year 71 miles of new pavement were laid in the borough of Brooklyn, while during 1914 only 45 miles were laid, due to the greatly reduced appropriations for repaving, and the small number of authorizations for assessment work (500 to 600 contracts). The total number of men employed on construction, maintenance, *etc.*, in the bureau of highways, is 1,000 men. The bureau is divided into divisions of maintenance, construction, accounts, permits, design and survey, with an engineer in charge of each division, who reports to the chief engineer.

MARCUS M. MARKS, President of the Borough of Manhattan:

The borough president is responsible for the departments of public works and buildings. In addition, as a member of the board of estimate and apportionment, he has the opportunity to obtain a proper sense of perspective regarding the needs of all the boroughs. As a member of the board of aldermen, he has the opportunity to be in touch with the legislative department of city government.

The department of public works has charge of the design, construction and repair of highways, sidewalks and sewers, as well as the care

of public buildings, including the municipal building, city hall, hall of records, court houses, comfort stations, public baths and public markets.

In connection with highways the relative cost and advantages of asphalt, wood block and granite block require particular study. Asphalt is the cheapest and granite block the dearest in original construction. Under heavy traffic granite is the most desirable and in the long run probably the most economical, and it affords a good foothold for horses, an advantage over asphalt and wood block. An objection to granite is its noise under wagon wheels that are not rubber-tired. The rapidly increasing use of rubber tires, however, will, in my judgment, increase the availability of granite block paving.

There are at present too many cuts being made in the pavements on account of gas, water and other connections. In Manhattan there were 28,000 such cuts last year. We are making great efforts to reduce this number. We shall, in the future, place signs at the corners of streets about to be paved which will give notice to the property owners to make any sub-surface connections before the paving is placed. We are also for the first time making public through the daily press the names and numbers of streets to be paved and the type of pavement to be used.

We have recently evolved a new type of street sign which embraces on one surface the name of the avenue and of the street as well; so that in driving along the avenue one will no longer be compelled to crane the neck in order to see what street is being passed. The new type of sign is placed so as to be plainly visible by night as well as day.

The 520 miles of sewers in Manhattan were nearly all constructed between the years 1835 and 1870. There is a necessity for large repairing forces and constant reconstruction. There are important problems to be solved in connection with our sewer development in order to save New York harbor from sewage pollution. In connection with snow removal the sewers were used during the past winter more freely than ever before.

The bureau of design and survey handles all survey and drafting work for the several bureaus under the department of public works. It is charged also with the preparation of the official map of the borough. While the oldest of the boroughs, Manhattan is least advanced in its official map because of the great difficulties involved in tracing the old streets back to old Dutch and English days. The importance of this work is obvious when the very large real estate values which exist in downtown New York are considered. The thousands of miles of pipes beneath the city streets, including in some instances as many as eight gas pipes under a single roadway, disclose the importance of another branch of

the bureau of design and survey which has to do with the mapping of such sub-surface structures. Many other activities of a minor nature are included under this bureau.

The bureau of buildings has charge of the erection and alteration of all buildings in the borough except federal buildings, the buildings along the waterfront under the jurisdiction of the department of docks and ferries, and the buildings along the transit lines, which are under the control of the public service commission. This bureau also has charge of the safety of all these buildings, as well as the installation and changing of the plumbing and drainage systems, and the quarterly inspection of all passenger elevators. There are in the borough of Manhattan 85,000 buildings at this time.

(675)